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Journal of Materials Chemistry C

Materials for optical, magnetic and electronic devices

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IN THIS ISSUE

ISSN 2050–7526 CODEN JMCCCX 13(13) 6469–6946 (2025)

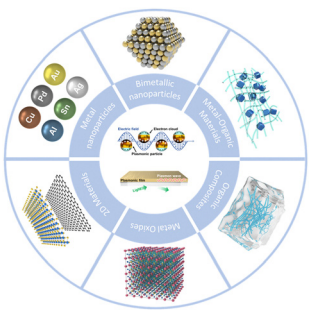
Cover
See Weikang Wu, Hui Li *et al.*, pp. 6527–6538. Image reproduced by permission of Hui Li from *J. Mater. Chem. C*, 2025, **13**, 6527.

REVIEW

6484

Advancements in surface plasmon resonance sensors for real-time detection of chemical analytes: sensing materials and applications

Sung Hwan Cho, Seungwon Choi, Jun Min Suh and Ho Won Jang*

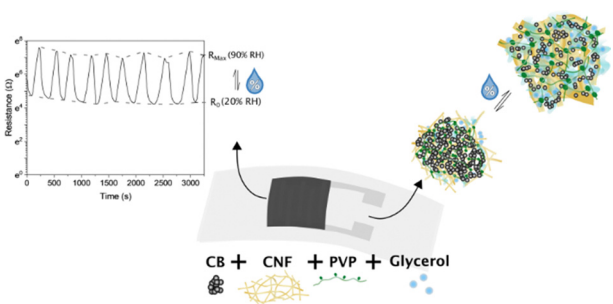


COMMUNICATION

6508

Flexible CNF/CB-based humidity sensors with optimized sensitivity and performance

Cláudia Buga and Júlio Viana*



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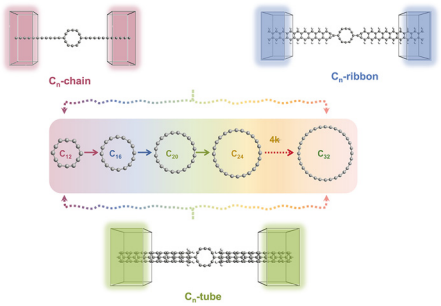
PAPERS

6527

Nonlinear transport behaviors in anti-aromatic cyclo[*n*]carbon-based (*n* = 4*k*) molecular devices

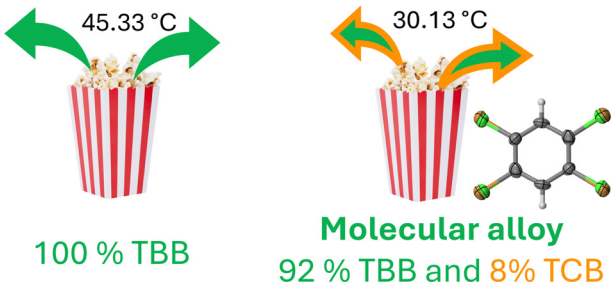
Junnan Guo, Wenhui Fang, Jian Huang, Lishu Zhang, Weikang Wu* and Hui Li*



6539

Tetrabromobenzene-based molecular alloys – a tool for tailoring the temperature of the thermosalient phase transition

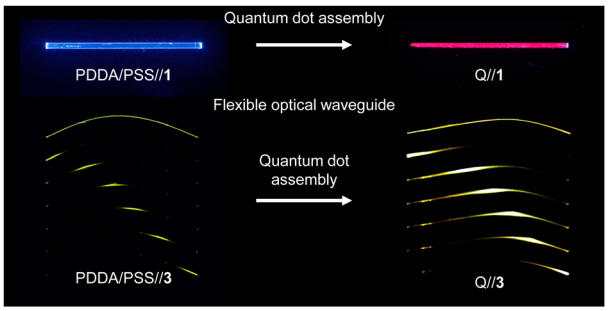
Teodoro Klaser, Oskar Stepančić, Jasminka Popović, Jana Pisk, Luka Pavić, Igor Picek, Dubravka Matković-Čalogović and Željko Skoko*



6547

Flexible organic crystal-quantum dot hybrids with adjustable waveguides

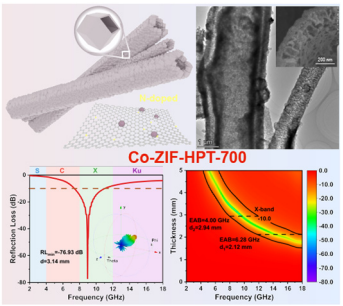
Xuesong Yang, Boyang Gao, Yi Liu, Baolei Tang,* Hao Zhang* and Hongyu Zhang*



6556

Hollowing integration engineering to construct MOF-derived carbon composites for lightweight and efficient microwave absorption materials

Zhe Zhang, Jiewu Cui,* Dongbo Yu, Pengjie Zhang, Wei Sun, Yong Zhang, Song Ma, Xiaohui Liang and Yucheng Wu*



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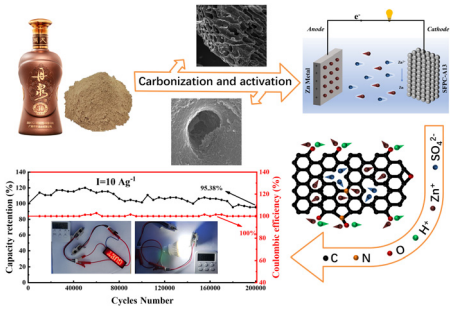
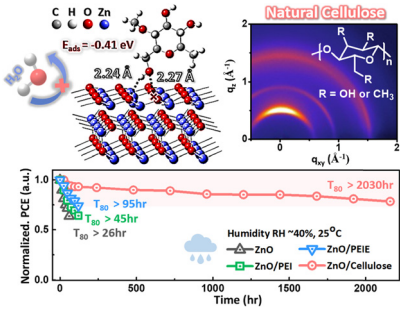
6569



Transforming biomass waste sauce-flavor liquor lees into porous carbons for high-performance aqueous zinc-ion hybrid capacitors

Guimei Wei, Ye Tian, Xingning Tang, Weihua Yin, Hongliang Peng,* Lixian Sun,* Guanghua Wang, Fen Xu, Yongjin Zou, Huanzhi Zhang and Ping Cai*

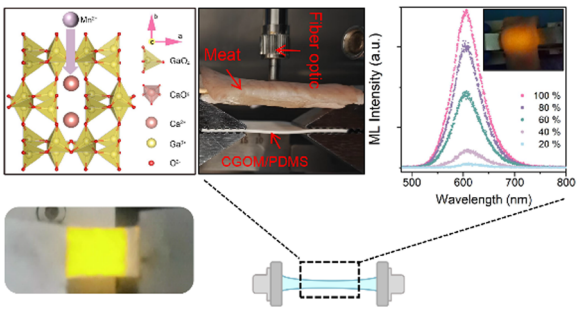
6581



Boosting the long-term stability of all-polymer solar cells by using natural cellulose as an interlayer

Guan-Lin Chen, Po-Tuan Chen, Ching-I Huang* and Leeyih Wang*

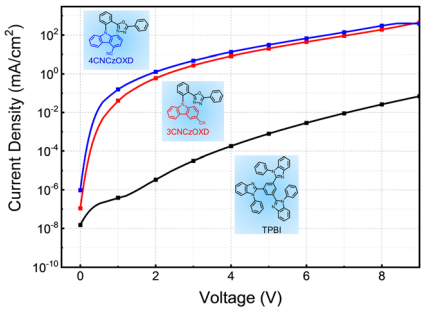
6588



Intense and repeatable orange mechanoluminescence of Mn^{2+} activated $CaGa_4O_7$ for visualized mechanics sensing

Yongwen He, Jie Wang, Shaofan Fang,* Junshan Qin, Long Feng, Birong Tian, Shaowei Feng* and Zhaofeng Wang*

6598



Carbazole derivatives as electron transport and n-type acceptor materials for efficient organic light-emitting devices

Shiying Hu, Yaotian Zhang, Jingsheng Wang, Yuying Wu, Yeting Tao, Wenbo Yuan and Youtian Tao*

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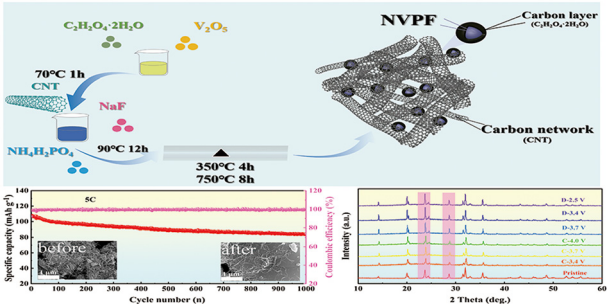
PAPERS

6605

Multilevel carbon composite construction of NASICON-type $NaVPO_4F$/C/CNT cathode material for enhanced-performance sodium-ion batteries

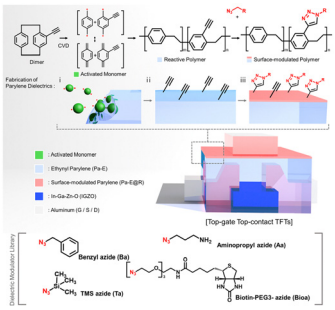
Kang Tang, Hualing Tian, Yanhui Zhang, Yanjun Cai, Hong Du, Mofan Zhu, Xiang Yao* and Zhi Su*



6614

Tunable dielectric properties of a parylene dielectric layer through surface-modulation by click chemistry

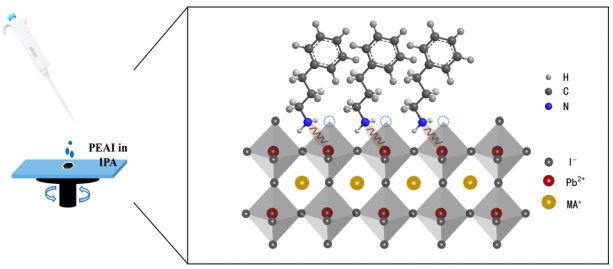
Seong Cheol Jang, Gunoh Lee, Ilhoon Park, Byeongil Noh, Ji-Min Park, Jaewon Lee, Kyung Jin Lee* and Hyun-Suk Kim*



6624

***In situ* formation of a low-dimensional perovskite structure for efficient single-crystal $MAPbI_3$ solar cells with enhanced ambient stability**

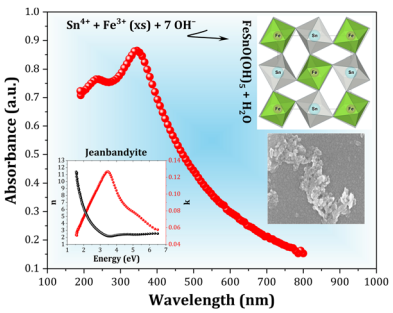
Mingxun Liu, Xinbo Guo, Nianqiao Liu, Changke Jiang, Jian Zhang, Zhaolai Chen and Yu Zhong*



6630

Linear and non-linear optical properties of $FeSnO(OH)_5$ oxyhydroxide perovskite

Abdelhadi El Hachmi,* Goutam Biswas, Subhadeep Sen, Bouchaib Manoun, Khalid Draoui and Zouhair Sadoune



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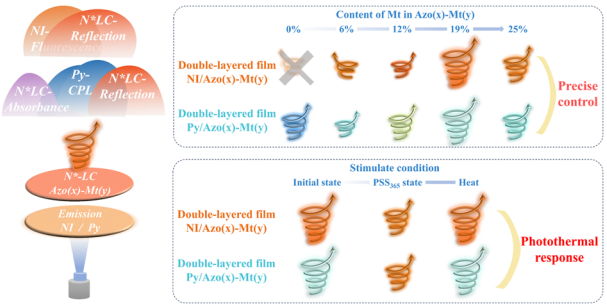
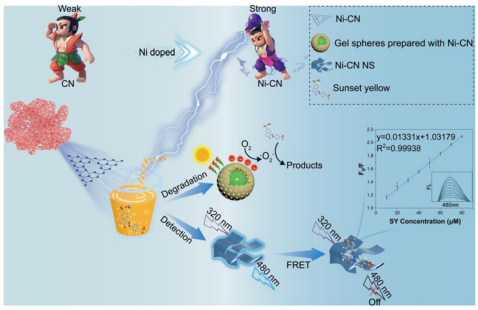
6641



Photothermal response and precise control of circularly polarized luminescence *via* double-layered films based on cholesteric liquid crystals

Sha Huang, Qimei Wu, Yongjie Hu, Xincan Wang, Yongjie Yuan* and Hailiang Zhang*

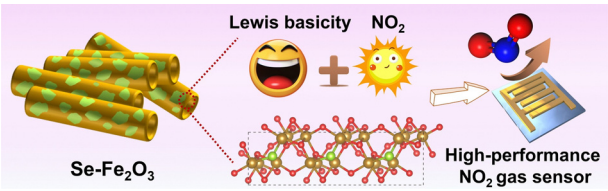
6650



Coral-like porous tubular Ni doped g-C_3N_4 nanocomposites as bifunctional templates for photocatalytic degradation and fluorescence detection of sunset yellow in beverages

Yue Li, Ping Liu, Shisen Li, Yanting Ren, Wenzhen Du, Wenjing Yin, Haiyan Jiang, Qingli Yang and Yongchao Ma*

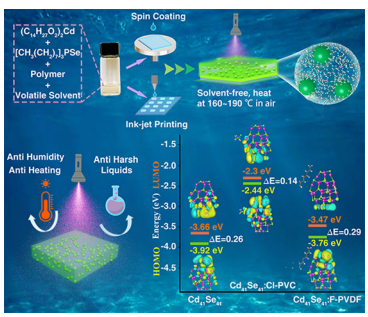
6660



Selenium-doped hematite (α-Fe_2O_3) hollow nanorods for highly sensitive and selective detection of trace NO_2

Tingting Liang, Yan Li, Xu Zhang, Hongwei Bao, Fengnan Li, Xueqian Liu, Zhengfei Dai and Hang Liu*

6669



***In situ* synthesis of cadmium selenide quantum dots in solvent-free polymer templates demonstrating stable photoluminescence in a harsh atmosphere**

Qiao Wang, Wenfei Shen, Jin Liu, Fan Gao, Yao Wang, Yanxin Wang, Zhonglin Du, Linjun Huang, Mikhail Artemyev, Haijiao Xie, Jun Li, Laurence A. Belfiore and Jianguo Tang*

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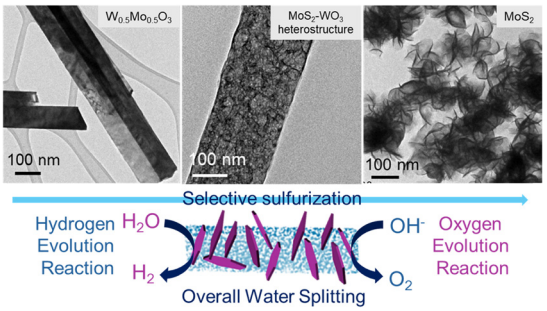
PAPERS

6678

Transforming $Mo_{0.5}W_{0.5}O_3$ to MoS_2: leveraging selective sulfurization for enhanced electrocatalysis

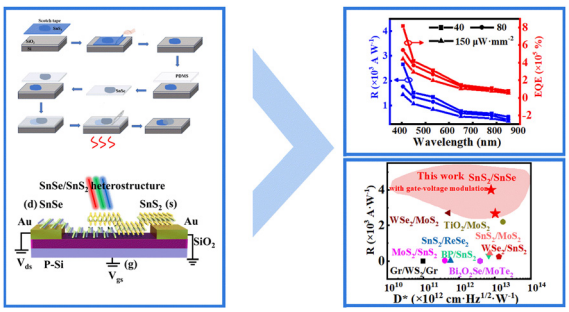
Naveen Goyal, Gokul Raj, Karuna Kar Nanda and N. Ravishankar*



6693

High-performance visible-to-near infrared phototransistor based on SnSe/SnS_2 van der Waals heterostructure

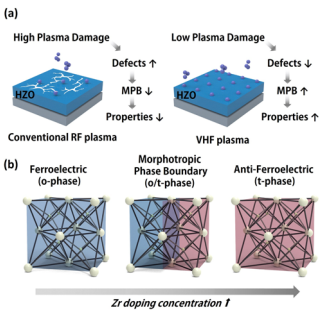
Gaoning Fan, Weishuai Duan, Mengjiao Dong, Xueting Luo, Pengyu Zhou,* Chun Sun, Yonghui Zhang, Mengjun Wang and Chao Fan*



6702

Very high frequency (∼100 MHz) plasma enhanced atomic layer deposition high-κ hafnium zirconium oxide capacitors near morphotropic phase boundary with low current density & high-κ for DRAM technology

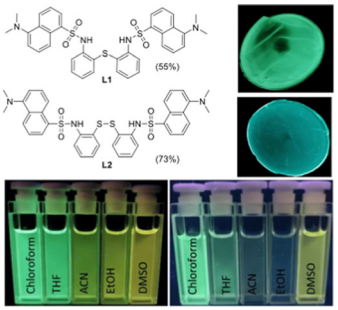
Ketong Yang, Hunbeom Shin, Seungyeob Kim, Taeseung Jung and Sanghun Jeon*



6708

Design and evaluation of dansyl-derived chemosensors for disulfide-cleavage-triggered detection: photophysical, metal sensing, and thermometric applications

Igor Lourenço, Frederico Duarte, Georgi M. Dobrikov, Atanas Kurutos,* Ivaylo Slavchev, José Luis Capelo-Martínez, Hugo M. Santos and Carlos Lodeiro*



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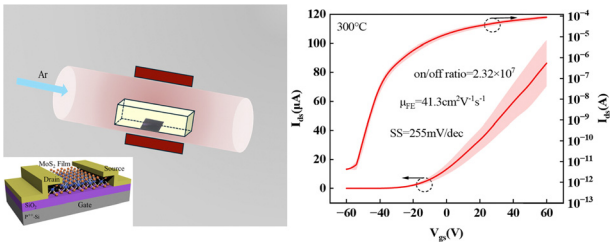
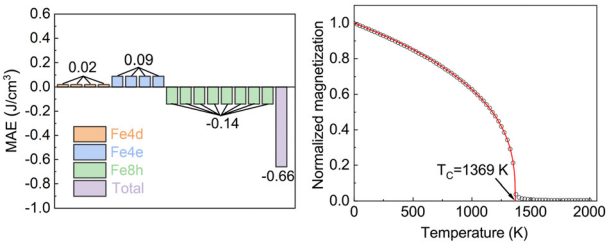


Reducing MoS_2 FET contact resistance by stepped annealing to optimize device performance

Peng Liu, Xin Lin, Zewen Li, Dianyou Song,* Fang Wang,* Yan Cheng, Sannian Song and Kailiang Zhang*

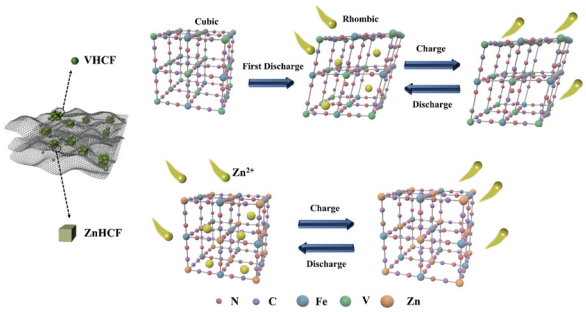
6728



Electronic structures and magnetic properties of the rare-earth-free permanent magnet α''-$Fe_{16}N_2$: first-principles calculations

Peirun Duan, Qingming Ping, Douqiang Sun, Qihang Luo, Haojie Li, Haoyu Xu, Xian Liu, Xiaohui Shi* and Lulu Du*

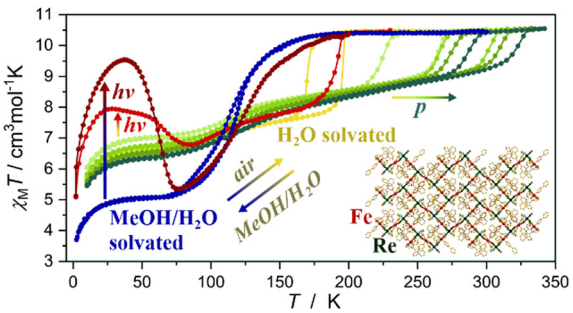
6736



Conductive network enhanced self-assembled diphasic Prussian blue analogs for aqueous zinc-ion batteries

Bingbing Hu,* Dongshan Li, Meixin Li, Jiayu Jiang, Ye Zou, Yu Deng, Zideng Zhou, Hong Pu, Guangqiang Ma and Zhi Li*

6745



Chemically driven magnetic responsivity to multiple physical stimuli in a spin-crossover layered iron(II)–rhenium(V) framework

Tomasz Charytanowicz, Michał Heczko, Katarzyna Dziedzic-Kocurek, Dawid Pinkowicz, Shin-ichi Ohkoshi, Szymon Chorazy* and Barbara Sieklucka*

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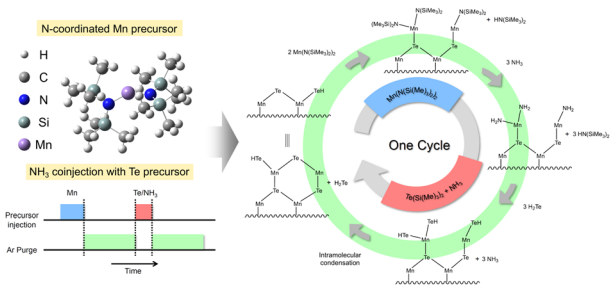
PAPERS

6762

Low-temperature atomic layer deposition of metastable MnTe films for phase change memory devices

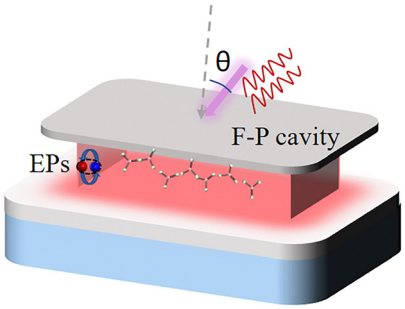
Gwangsik Jeon, Jeongwoo Jeon, Woohyun Kim, Daehyeon Kim, Wontae Noh, Wonho Choi, Byongwoo Park, Sangmin Jeon, Sungjin Kim, Chanyoung Yoo* and Cheol Seong Hwang*



6772

Polariton emission properties of an organic dye-doped polymer microcavity

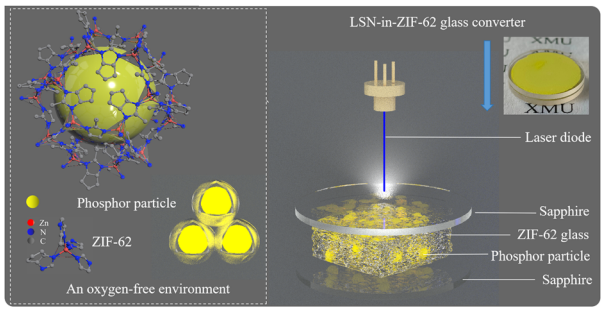
Lulu Xue, Ziyang Chen, Yatong Zhang, Xiaoya Yan, Liang Zhao, Pengxue Jia, Bo Gao* and Hongyan Shi*



6779

Fabrication of loss-less $La_3Si_6N_{11}:Ce^{3+}$ phosphor-in-glass color converters using oxygen-free ZIF-62 glass

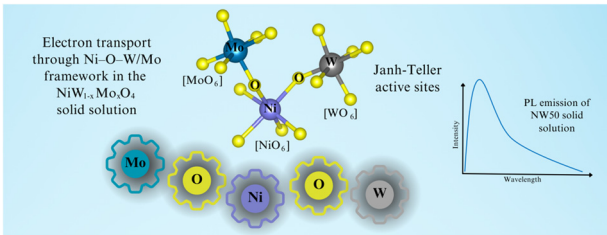
Taoli Deng, Zan Ding, Shuang Zheng and Rong-Jun Xie*



6788

Disentangling the structure, optical properties, and photoluminescence emissions of $NiW_{1-x}Mo_xO_4$ (x = 25, 50, and 75%) solid solutions: experimental and DFT studies

Amanda Fernandes Gouveia,* Marcelo Assis, Lara Kelly Ribeiro, Eduardo de Oliveira Gomes, Marcio Daldin Teodoro, Elson Longo and Juan Andrés*



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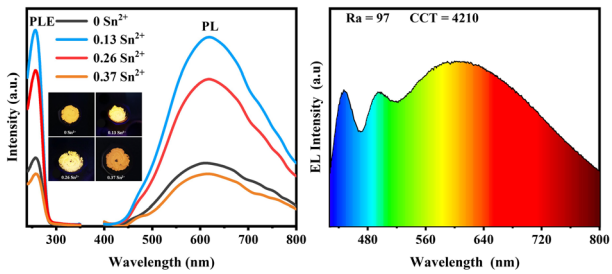
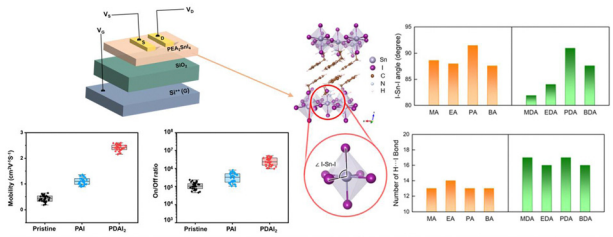


Highly efficient orange luminescence in Sn^{2+}-doped $Cs_2AgInCl_6$ double perovskite with a large Stokes shift

Jingrui Guo, Jing Guo,* Yuchen Peng, Jiajia Wang, Weidan Ma, Na Zhang, Yan Zhang, Yufeng Liu* and Yongzheng Fang*

6806



Alkylammonium passivation for 2D tin halide perovskite field-effect transistors

Hakjun Kim, Cheong Beom Lee, Bum Ho Jeong, Jongmin Lee, Jia Choi, Kyeounghak Kim* and Hui Joon Park*

6816

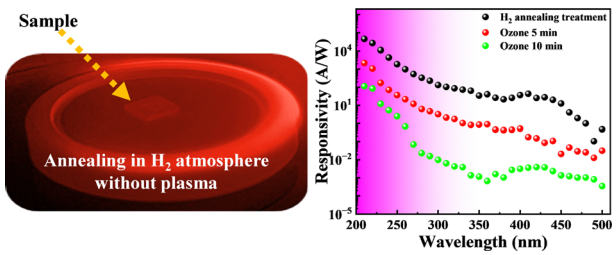
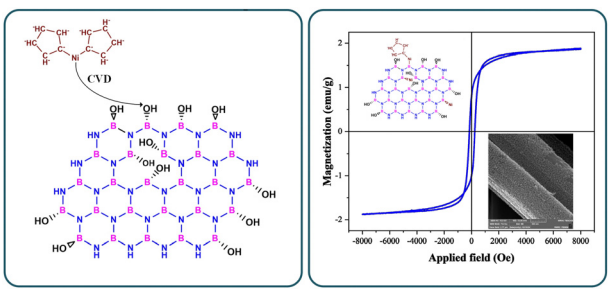


Photo-response performance regulation of a type-Ib diamond-based photodetector by H_2 annealing and ozone treatment

Keyun Gu, Zilong Zhang, Takeo Ohsawa, Masataka Imura, Jian Huang,* Yasuo Koide and Meiyong Liao*

6823



Nickel-deposited hexagonal boron nitride composites synthesized *via* chemical vapor deposition: unlocking enhanced magnetic properties for advanced technologies

Samira Mehravar, Benyamin M. Garmejani and Shohreh Fatemi*

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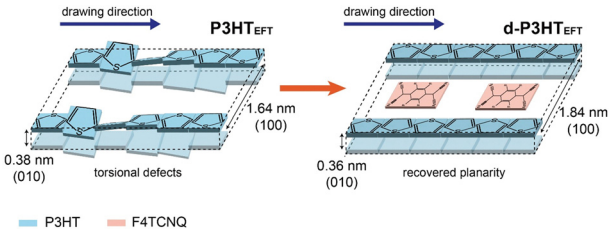
6831

Self-healing of defects in uniaxially aligned semiconducting polymer crystals *via* molecular doping: insights into crystallization from transient *vs.* settled amorphous phases

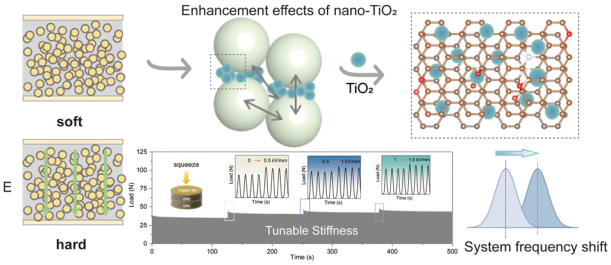
Hokyeong Jeong, Sangwon Eom, Sanghoon Cho, Thanh Van Vu, Jae Hyun Sim, Jinwoo Choi, Seungjoo Park, Sangho Kim, Sangeun Baek, Hyunmin Lee, Hoeil Chung and Youngjong Kang*



6842

Electrorheological elastomer for simultaneous enhancements in durability and micro-vibration suppression

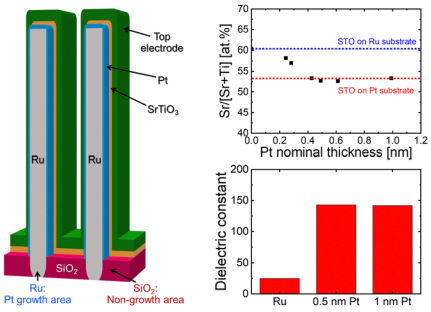
Sai Chen, Leizhi Wang, Ke Zhang,* Wen Bai and Yao Li



6851

Enhancing the crystallinity and dielectric performance of ALD-grown $SrTiO_3$ films by introducing a sub-nm-thick Pt layer

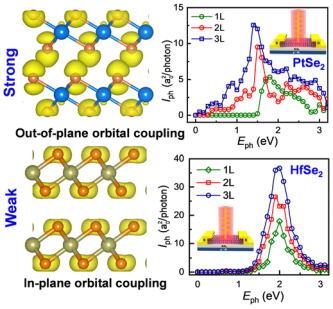
Hong Keun Chung, Jihoon Jeon, Seungwan Ye, Sung-Chul Kim, Sung Ok Won, Tae Joo Park and Seong Keun Kim*



6859

Unraveling the interlayer coupling effect on layer-dependent electronic and optoelectronic properties in two-dimensional semiconductors

Zeqi Hua, Haibo Shu,* Dabao Xie, Zehao Liu, Jiayu Liang,* Jing Zhou, Xiaoshuang Chen and Dan Cao



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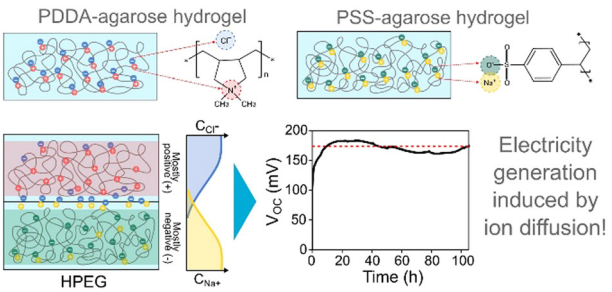
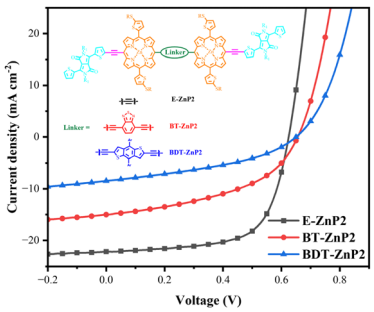
6870



A hydrogel-ionic polymer blend for humidity-insensitive ion gradient driven electricity generation

Byeunggon Kim, Paniz Faramarzi, Jeong Hyo Kim, Wonik Jang, Youngmin Yoo* and Jae Bem You*

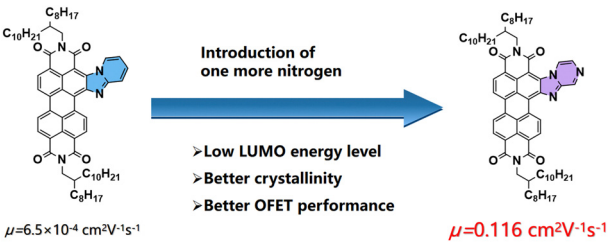
6880



Impacts of linking units of porphyrin dimer donors on the performance of organic solar cells

Hanping Wu, Jifa Wu, Feng Tang, Lin Yuan, Yinchun Guo, Yumeng Li and Xiaobin Peng*

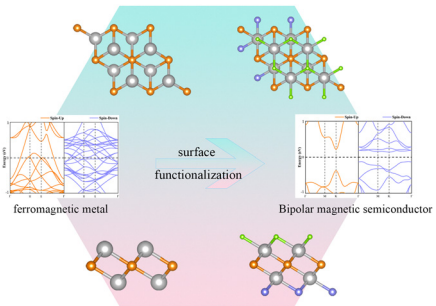
6888



***ortho*-π-Extension of perylene diimides *via* one-pot annulation of imidazo[1,2-*a*]pyridine or imidazo[1,2-*a*]pyrazine for n-type organic field-effect transistors**

Yinxiang Liao, Cui Wang, Luyao Dai, Guangwei Shao, Xingyu Chen, Di Wu* and Jianlong Xia*

6896



Engineering the electronic structures and ferromagnetism of Fe_2C monolayers *via* surface functionalization

Xiaolong He, Yaya Lou, Dongni Wu and Jing Xie*

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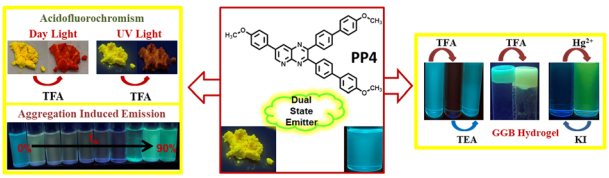
6907

AIEE active dual-state emissive tripodal pyridopyrazine derivatives as multi-stimuli responsive smart organic materials

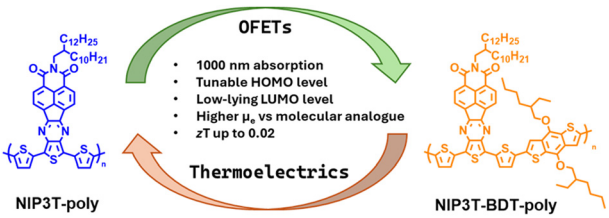
Monika Lamoria, Debashree Manna and Marilyn Daisy Milton*



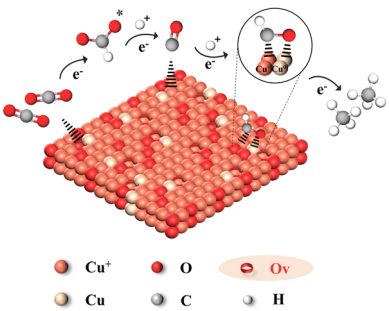
6922

Low-bandgap oligothiophene-naphthalimide oligomeric semiconductors for thermoelectric applications

Matías J. Alonso-Navarro, Osnat Zapata-Arteaga, Sergi Riera-Galindo, Jiali Guo, Aleksandr-Peredeventsv, Edgar Gutiérrez-Fernández, Juan Sebastián Reparaz, Mar Ramos, Christian Müller, Jaime Martín, Marta Mas-Torrent, José L. Segura* and Mariano Campoy-Quiles*



6933

Promotion of electrochemical reduction of CO_2 over the Cu_2O–Cu(111) interface assisted by oxygen vacancies

Shuang Xu, Lei Yang, Congya Wang, Liwei Pan, Jing Zhang, Yaling Wang and Hexiang Zhong*